

## CLAIMS

### WHAT IS CLAIMED IS:

1 A razor, comprising:  
2 a handle having a longitudinal axis;  
3 a shaving head carrying at least one blade with at least one cutting edge and  
4 defining a transverse axis parallel to said at least one cutting edge;  
5 a connector assembly movably coupling said handle to said shaving head;  
6 and  
7 a biasing element spaced from said connector assembly and disposed  
8 between said shaving head and said handle, said biasing element biasing said shaving head  
9 into a rest position;  
10 wherein said connector assembly permits said shaving head to exhibit a first  
11 movement toward and away from said handle into and out of the rest position.

1 2. A razor as in claim 1, wherein said connector assembly further permits a  
2 pivoting second movement forward and backward about a pivot axis parallel to said  
3 transverse axis into and out of the rest position.

1 3. A razor as in claim 2, wherein said biasing element biases said head into the  
2 rest position against said first movement and said second movement.

1 4. A razor as in claim 2, wherein the connector assembly includes at least one  
2 insertion element and at least one cutout shaped to receive said at least one insertion  
3 element, wherein said at least one cutout has dimensions greater than the dimensions of said  
4 at least one insertion element to allow said first movement and said second movement.

1 5. A razor as in claim 4, wherein said at least one insertion element is a pin.

1 6. A razor as in claim 4, wherein said handle, said insertion element, and said  
2 biasing element are a single piece.

1 7. A razor as in claim 4, further including a neck piece coupled to said handle,  
2 wherein said neck piece includes said at least one insertion element.

1 8. A razor as in claim 7, wherein said neck piece includes said biasing element.

1 9. A razor as in claim 1, wherein said biasing element is at least one leaf spring.

1 10. A razor as in claim 1, wherein said biasing element is a spring-loaded  
2 tongue.

1 *Sub B3* 11. A razor as in claim 1, wherein during the first movement, when said shaving  
2 head is moved out of the rest position, said transverse axis is oblique to said longitudinal  
3 axis.

1 12. A razor as in claim 1, wherein during the first movement, when said shaving  
2 head is out of the rest position, said transverse axis is perpendicular to said longitudinal  
3 axis.

1 13. A razor as in claim 1, wherein when said shaving head is out of the rest  
2 position, said transverse axis is perpendicular or oblique to said longitudinal axis depending  
3 on the degree and location of at least one force applied to said shaving head.

1 *Sub B3* 14. A razor, comprising:  
2 a handle having a first end, a spaced second end, and a longitudinal axis  
3 extending between said first and second ends;  
4 a shaving head carrying at least one blade with at least one cutting edge and  
5 defining a transverse axis parallel to said at least one cutting edge;  
6 a head-engaging element and a handle-engaging element movably coupling  
7 said handle to said shaving head; and  
8 a biasing element biasing said shaving head into a rest position, said biasing  
9 element and said head-engaging element being disposed only at said first end of said handle  
10 and formed as a single piece.

1 *Sub B3* 15. A razor as in claim 14, wherein:  
2 said connector assembly includes at least one post with a pin extending  
therefrom and a cutout for receiving said at least one pin; and

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4           said cutout has dimensions greater than the dimensions of said pin received  
5           therein to allow movement of said shaving head toward and away from said handle and  
6           pivoting of said shaving head upward and downward about a pivot axis parallel to said  
7           transverse axis.

1           16.    A razor as in claim 15, wherein said biasing element is at least one leaf  
2           spring disposed between said posts such that at least one free end of said at least one leaf  
3           spring is adjacent said longitudinal axis and at least one fixed end of said leaf spring is  
4           adjacent said posts.

1           17.    A razor as in claim 15, wherein said biasing element is at least two leaf  
2           springs and said at least one post is disposed between said leaf springs such that said fixed  
3           ends of said leaf springs are adjacent said at least one post and said free ends of said leaf  
4           springs are spaced outwardly therefrom.

1           18.    A razor as in claim 15, wherein said at least one post and pin are formed on  
2           said handle and said at least one cutout is formed in said shaving head.

1           19.    A razor as in claim 14, wherein said biasing element is at least one leaf  
2           spring disposed between said handle and said shaving head and having a free end.

1           20.    A razor as in claim 19, wherein said free end of said at least one leaf spring  
2           has a cam surface formed thereon.

1           21.    A razor as in claim 20, wherein said shaving head further includes a  
2           projection extending therefrom, and said cam surface contacts said projection to bias said  
3           shaving head into the rest position.

1           22.    A razor as in claim 19, wherein said at least one leaf spring includes two leaf  
2           springs each having a free end, said free ends of said leaf springs being spaced apart to form  
3           a gap therebetween.

1           23.    A razor as in claim 19, wherein said at least one leaf spring includes two leaf  
2           springs each having a fixed end and a free end, said fixed ends of said leaf springs

3 extending from a member that is connected to said handle such that said leaf springs and  
4 said member form a Y-shape.

1 24. A razor as in claim 14, wherein said shaving head is releasably coupled to  
2 said handle.

1 25. A razor system comprising:  
2 a handle;  
3 a razor cartridge carrying at least one blade with at least one cutting edge and  
4 defining a transverse axis parallel to said at least one cutting edge, said razor cartridge  
5 having a longitudinal axis perpendicular to said transverse axis; and  
6 a connector assembly provided between said handle and said razor cartridge  
7 to couple said razor cartridge removably to said handle for ready decoupling of said razor  
8 cartridge from said handle for disposal of said razor cartridge and replacement with another  
9 razor cartridge;

10 wherein:

11 said connector assembly includes a cartridge-engaging element on said  
12 handle and a handle-engaging element on said razor cartridge, said cartridge-engaging  
13 element and said handle-engaging element being configured to be removably coupled  
14 together without use of a separate connection element to couple said razor cartridge and said  
15 handle together; and

16 said cartridge-engaging element and said handle-engaging element are  
17 configured to permit said razor cartridge simultaneously and independently to pivot about  
18 said transverse axis in a pitching movement, to move toward and away from said handle  
19 with said transverse axis remaining in the same orientation in a cushioning movement, and  
20 to pivot about said razor cartridge longitudinal axis in a rolling movement.

1 26. A razor system as in claim 25, further comprising a biasing element biasing  
2 said razor cartridge into a rest position once a force causing one or more of said pitching,  
3 cushioning, and rolling movements is removed.

1 27. A razor system as in claim 26, wherein said biasing element is spaced from  
2 said connector assembly.

28. A razor system as in claim 26, wherein said biasing element is a spring-loaded tongue.

29. A razor system as in claim 25, wherein one of said cartridge-engaging element and said handle-engaging element is an insertion element and the other of said cartridge-engaging element and said handle-engaging element is at least one cutout shaped to receive said insertion element.

30. A razor system as in claim 29, wherein said insertion element includes a post with a pin extending transversely therefrom shaped for insertion into said cutout.

31. A razor system as in claim 29, wherein:  
said post and pin include a first post having a first pin and a second post having a second pin;  
said at least one cutout includes a first cutout for receiving said first pin and a second cutout for receiving said second pin; and  
said first and second posts are resiliently movable with respect to each other to facilitate insertion into and removal of said first and second pins from said first and second cutouts, respectively.

32. A razor system as in claim 31, further including at least one button coupled to at least one of said first and second posts to move said at least one of said first and second posts upon movement of said button.

33. A razor comprising:  
a handle;  
a shaving head carrying at least one blade with at least one cutting edge and defining a transverse axis parallel to said at least one cutting edge and a longitudinal axis perpendicular to said transverse axis; and  
a connector assembly comprising a head-engaging element and a handle-engaging element movably coupling said shaving handle to said head upon coupling said head-engaging element and said handle-engaging element together;  
wherein said head-engaging element and said handle-engaging element are:  
configured for insertion of one into the other to result directly in coupling of said shaving head to said handle; and

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12 are movable with respect to each other when coupled together to permit said  
13 shaving head simultaneously and independently to pivot about said transverse axis in a  
14 pitching movement, to move toward and away from said handle with said transverse axis  
15 remaining in the same orientation in a cushioning movement, and to pivot about said  
16 shaving head longitudinal axis in a rolling movement.

1 34. A razor as in claim 33, further comprising a biasing element biasing the  
2 shaving head into a rest position.

1 35. A razor as in claim 34, wherein said biasing element is spaced from said  
2 head-engaging element and said handle-engaging element.

1 36. A razor as in claim 33, wherein said head-engaging element and said handle-  
2 <sup>sub</sup> engaging element are directly coupled together.

1 37. A razor as in claim 33, wherein one of said head-engaging element and said  
2 handle-engaging element is a post with a pin extending therefrom and the other of said  
3 head-engaging element and said handle-engaging element is a cutout having dimensions  
4 larger than the dimensions of said pin to allow said pitching, cushioning, and rolling  
5 movements.

1 38. A method of modifying a razor having a shaving head movably coupled to a  
2 handle to increase the degree of freedom of movement between the shaving head and the  
3 handle, the shaving head carrying at least one blade with at least one cutting edge and  
4 having a transverse axis parallel to the at least one cutting edge and a longitudinal axis  
5 perpendicular to the transverse axis, the shaving head being movably coupled to the handle  
6 for pivoting about the transverse axis by insertion of an insertion element on one of the  
7 handle and shaving head into a hole in the other of the handle and shaving head, said  
8 method comprising the step of:

9 increasing the size of the hole to form a cutout to increase the mobility of the  
10 insertion element therein to permit cushioning movement of the shaving head toward and  
11 away from the handle and rolling movement of the shaving head about the transverse axis  
12 thereof in addition to the pivoting movement about the transverse axis.

- 1 39. A method of modifying a razor as in claim 38, further comprising the step of  
2 providing a biasing element in a position to bias the shaving head against any of the  
3 pivoting, cushioning, or rolling movements of the shaving head with respect to the handle.

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